

Request for Conditional Closure

Site: The site, consisting of three subsites, is collectively known as the Lukanin Bay Site or Two Party Agreement (TPA) Site 12. The subsites are referred to as Lukanin Bay Debris Area A (TPA Site 12a, National Oceanic and Atmospheric Administration [NOAA] Site 31), Lukanin Bay Debris Area B (TPA Site 12b, NOAA Site 32), and Lukanin Bay Petroleum-Contaminated Soil (PCS) Area (TPA Site 12c, NOAA Site 33).

Herein, the individual subsites are referred to by the names listed above; collectively, they are referred to as the “site.”

Location: St. Paul Island, Alaska is approximately 800 miles southwest of Anchorage in the Bering Sea. Lukanin Bay is located on the island’s southeast side, approximately one mile northeast of the City of St. Paul (Figure 1). The Lukanin Bay Debris Area A is located on the eastern side of Diamond Hill Road near the old beach access roads, approximately 200 feet from the bay (57° 08’ 07.32” N latitude, 170° 15’ 46.05” W longitude; Figure 2). The Lukanin Bay Debris Area B (57° 08’ 09.14” N latitude, 170° 15’ 50.10” W longitude) and the Lukanin Bay PCS Area (57° 08’ 09.36” N latitude, 170° 15’ 50.20” W longitude) are located on the western side of Diamond Hill Road, approximately 450 feet west of the bay (Figure 2). There is some overlap in the extent of the Lukanin Bay Debris Area B and the PCS Area.

Legal Property Description: The site is located in Section 19, Township 35 South, Range 131 West, of the Seward Meridian, Alaska as shown on the plat of rectangular survey officially filed May 14, 1986. The Tanadgusix Corporation (TDX) owns the surface estate and The Aleut Corporation owns the subsurface estate of the site.

Type of Release: The site was used for the disposal of metal and wood debris, electrical cabling and controls, general household refuse, 55-gallon drums, government vehicles, heavy equipment, industrial machinery, fire fighting and suppression systems, and steel storage tanks. Soil petroleum contamination evidently resulted from the leaking of debris contents.

History and Background:

Debris was purportedly deposited at the site on both sides of Diamond Hill Road within approximately 200 feet of the road. Based on 2000 closure activities (Nortech 2001), in a February 11, 2002 letter to NOAA, the Alaska Department of Environmental Conservation (ADEC) stated that no further remedial action was required at this site and that the site could be considered closed. Subsequently, on April 5, 2002, ADEC withdrew comments made in the February letter stating, “A no-further-action determination will not be granted until all of the contamination discovered during IT Corporation’s site characterization is properly addressed in accordance with cleanup regulations.”

Summary of Site Investigations:

Preliminary Assessment (1992)

Ecology and Environment, Inc. (E&E) conducted a preliminary assessment that identified the three areas that comprise TPA Site 12, although the exact locations of these three areas were not

documented (E&E 1993). One area was noted as being northeast of the tank farm, with debris scattered within some of the dunes adjacent to the road and on the beach. The debris included radiators, drums, engines, rusted metal fragments, and a tank. No visibly stained soil or stressed vegetation was observed. Following E&E's site visit, representatives of TDX reportedly told E&E during a telephone conversation that two additional areas of buried debris existed, one on the left and one on the right side of the road that leads away from Lukanin Bay and up to Diamond Hill (E&E 1993). The TDX representatives reported that the areas were vegetated.

Expanded Site Inspection (1995-1996)

Between 1995 and 1996, Hart Crowser, Inc. (Hart Crowser) conducted an expanded site inspection that included the excavation of 12 test pits and the advancement of four soil borings to depths up to 10 feet below ground surface (bgs). Analytical data for soil samples collected during the expanded site inspection indicated the presence of residual-range organic compounds (RRO) and diesel-range organic compounds (DRO) at concentrations up to 19,700 milligrams per kilogram (mg/kg) and 8,300 mg/kg, respectively. Hart Crowser estimated approximately 900 cubic yards of soil contained RRO and DRO at concentrations exceeding the ADEC Method Two cleanup levels (Hart Crowser 1997).

Site Characterization (1999)

Tetra Tech EM, Inc. (Tetra Tech) conducted site characterization activities at TPA Site 12 (Tetra Tech 2000), including the screening of soil samples using a photoionization detector (PID) and the removal of metal debris (see *Summary of Cleanup Actions* below). Tetra Tech identified four locations potentially contaminated with petroleum and collected screening samples from 0-2 feet bgs at each location. PID screening results for the samples (12TP01-12TP04) ranged from 8.0-12.0 parts per million (ppm) compared to about 10 ppm in background soil samples. Tetra Tech concluded that off-site soil sample analysis was not warranted and that no corrective action (other than removal of remaining debris) was warranted.

Tetra Tech did not provide a map or sketch of the sample locations, but the locations were described as follows.

- 12TP01: beneath the 1,500 gallon tank
- 12TP02: 15 feet away from the tank and 55-gallon drums (for comparison with 12TP03 and 12TP04)
- 12TP03: beneath the buried 55-gallon drums
- 12TP04: beneath the buried 55-gallon drums

Tetra Tech attempted to reach groundwater using a Geoprobe direct-push sampler. One borehole was advanced to 17 feet bgs, where refusal was encountered before reaching groundwater.

Site Characterization (2001)

IT Alaska Corporation (IT Alaska) conducted further site characterization activities at the site, including the collection of soil samples and the installation and sampling of two monitoring wells (MWLB-1 and MWLB-2; IT Alaska 2002). IT Alaska attempted to use soil borings to delineate the contamination identified by Hart Crowser, despite difficulties decisively locating the previously sampling locations. Analytical data for soil samples revealed that three sampling

locations (SP12-SB2, SP12-SB10, and SP12-SB29) contained DRO (up to 2,500 mg/kg) exceeding the ADEC Method Two cleanup level (Figure 3). Sample SP12-SB10 also contained 23,000 mg/kg RRO, exceeding the ADEC Method Two cleanup level for RRO. Additionally, one sampling location (SP12-SB32) contained the polynuclear aromatic hydrocarbon (PAH) benzo(a)pyrene above the Method Two cleanup level, with a concentration of 5.6 mg/kg (Figure 3). Chlorinated pesticides were also detected in soil above Method Two cleanup levels; however, the detections were suspected to be false positives due to the elevated petroleum concentrations.

Groundwater samples collected from monitoring wells MWLB-1 and MWLB-2 (Figure 2) found RRO exceeding the ADEC Table C cleanup level in a field duplicate collected from MWLB-2. The corresponding sample did not exceed the Table C cleanup level for RRO. Results for RRO are considered questionable because ADEC does not have an approved method for the analysis of RRO in water.

Based on soil sampling results, IT Alaska estimated that 52 cubic yards of soil required removal, including an estimated 18 cubic yards of PAH-contaminated soil.

Remedial Design Investigation (2003)

NOAA collected 63 samples from 11 soil boring locations at the site (NOAA 2003). All samples were analyzed for DRO using thin-layer chromatography (TLC) at NOAA's on-island laboratory, and six samples, collected by a qualified third party sampler, were analyzed for DRO, RRO, and chlorinated pesticides at an off-island fixed laboratory. Semi-quantitative TLC data indicated that in all but three samples DRO concentrations were below 100 mg/kg. The estimated DRO concentrations for samples SP33-CH-005-2-4, SP33-TLC-006-008, SP33-CH-007-020 were 5,000-10,000 mg/kg, 250 mg/kg, and 250-500 mg/kg, respectively. Sample SP33-CH-005-2-4 (Figure 3) was also analyzed in the fixed laboratory and determined to contain only 440 mg/kg DRO (above the ADEC Method Two cleanup level) as well as 3,100 mg/kg RRO, and 0.00184 mg/kg Aldrin. The only other analyte detected in fixed laboratory analyses was 4,4'-dichlorodiphenyltrichloroethane (DDT) in samples SP33-CH-009-050 and SP33-CH-011-010 at concentrations of 0.00329 mg/kg and 0.0117 mg/kg, respectively. These concentrations are below the ADEC Method Two cleanup level.

Groundwater Monitoring (2003-2004)

A Tetra Tech subcontractor installed a third monitoring well (MWLB-3) at the site in September 2003 (Figure 2). Between October 2003 and July 2004, Tetra Tech conducted four rounds of groundwater monitoring. During these sampling events, only chromium was detected above the ADEC Table C cleanup levels in samples collected from the site's three wells (Tetra Tech 2005). The chromium exceedance occurred only in MWLB-3 during one of the four sampling events.

Remedial Design Investigation (2004)

NOAA and a qualified third party sampler collected additional soil samples from 16 soil boring locations to investigate the potential pesticide contamination identified by IT Alaska in 2001 and NOAA in 2003 (NOAA 2004a). To eliminate the potential for matrix interference caused by the presence petroleum hydrocarbons, a sample cleanup procedure was conducted prior pesticide

analyses. Analytical results indicated no chlorinated pesticides were present at concentrations above the ADEC Method Two cleanup levels (NOAA 2004b).

Summary of Applied Cleanup Levels:

Based on analytical data and the possibility of site-derived contamination (*i.e.*, RRO) in groundwater, NOAA employed ADEC Method Two cleanup criteria, discussed at 18 AAC 75.341(c) (ADEC 2003).

Summary of Cleanup Actions:

Debris Removal (1986)

Debris removal activities conducted by Chase Construction, Inc. included the removal of the following items: twenty-six 500-gallon steel tanks; one 1,500-gallon empty steel tank; two to five 10,000-gallon steel tanks; twelve empty 55-gallon drums; six 1.5-ton trucks; 100 feet of 1.5-inch diameter steel pipe; 170 cubic yards of miscellaneous pipe, scrap wood, concrete, and metal debris; and a wood foundation and floor (U.S. Army 1991).

Debris Removal (1997)

Bering Sea Eccotech, Inc. removed surface debris from the site. Sub-surface debris were noted at that time but were not removed (Aleutian Enterprises 1997). No contaminated soils were identified during the removal action.

Debris Removal (1999)

During site characterization activities at the site, Tetra Tech removed metal debris from both sides of Diamond Hill Road (Tetra Tech 2000). Removed debris included a large engine block, pipe, cable, vehicle parts, wood, and concrete from the west side of Diamond Hill Road (*i.e.*, Lukanin Bay Debris Area B), and five 55-gallon drums, steel scrap, vehicle parts, and pipe from the east side of Diamond Hill Road (*i.e.*, Lukanin Bay Debris Area A). Approximately 3,200 pounds of debris were removed. A 1,500-gallon steel tank, largely buried, was left in place on the east side of the road because no equipment was available to remove it.

Site Closure Activities (2000)

Nortech Environmental and Engineering Consultants (Nortech) removed the 1,500-gallon steel tank as well as other metal debris from Lukanin Bay Debris Area A. PID readings in the area of the tank excavation revealed no indications of soil contamination. No soil staining or stressed vegetation was observed. A single soil sample collected from inside the tank for fixed laboratory analysis did not contain detectable levels of petroleum hydrocarbons. Nortech installed erosion control matting in the areas disturbed by heavy equipment and transplanted native plants and grasses to restore a vegetative cover (Nortech 2001).

PCS Corrective Action (2004)

Focusing on five previously identified hot spot locations, excavation activities for the Lukanin Bay PCS Area commenced on July 3, 2004 (Figure 3). NOAA used its survey grade global positioning system (GPS) to relocate and mark these sampling locations before the start of excavation activities.

As excavation at the hot spot locations was expanded based on the results of TLC screening sample analyses as well as visual and olfactory observations, four of the hot spot excavations merged into one. This area, located in the southern portion of the Lukanin Bay PCS Area, became known as Area 1. The area of the remaining hot spot, located in the northeastern portion of the site, became known as Area 2 (Figure 4).

Area 1, which encompasses former sampling locations SP12-SB2, SP12-SB10, SP12-SB29, and SP12-SB32, was expanded horizontally to a size of approximately 4,500 square feet and vertically to a depth of 15 feet bgs throughout most of the excavation. Excavation at Area 1 was expanded significantly based on TLC screening sample analyses slightly above the ADEC Method Two cleanup level of 250 mg/kg. It was determined, however, that false positive results were being obtained from the TLC procedure because of interference associated with rubber-lined lids on the glass vials used in the analyses. This issue was subsequently resolved by using only paper- or Teflon-lined lids. Because of the false positive results, it is likely that a larger quantity of soil was removed than would have been required. A total of 18 confirmation samples were collected from Area 1 (Figure 4).

Area 2, which included former sampling location SP33-CH-005, was expanded horizontally to a size of approximately 200 square feet and vertically to a depth of approximately 4 feet bgs. A total of two confirmation samples were collected from this excavation (Figure 4).

Throughout excavation activities at the Lukanin Bay PCS Area, significant quantities of wood and metal debris were encountered and removed from up to 7 feet bgs. Debris included drums and miscellaneous pieces of scrap wood and metal. Twenty-four empty and extremely corroded drums were removed from Area 2. Along with large quantities of debris, balls of sand bound with residual oil were encountered and removed from several locations in Area 2; a stockpile sample (SP33-SS-009-000) collected from the sand balls indicated concentrations of DRO at 2,600 mg/kg and RRO at 9,100 mg/kg. In addition, an unidentified material was encountered and removed from the northern portion of Area 2. NOAA and Tetra Tech representatives reported that the unidentified material smelled like hydraulic or differential fluid, and irritated the eyes and mucous membranes; analysis of a TLC sample collected from the unidentified material indicated DRO concentrations below soil cleanup levels.

Confirmation samples collected from the bottom and sidewalls of the excavations at the Lukanin Bay PCS Area indicated all analyte concentrations are below ADEC Method Two cleanup levels (Tables 1 and 2). Laboratory reporting limits were below ADEC Method Two cleanup levels for all analyses except benzene. For benzene, reporting limits of 0.05 mg/kg or lower were achieved, which is above the ADEC Method Two cleanup level of 0.02 mg/kg, but below the soil cleanup level of 0.5 mg/kg established under the TPA (ADEC 1991, NOAA 1996).

During the corrective action, an estimated 1,778 cubic yards of PCS were removed from the excavations at the Lukanin Bay PCS Area. In addition, an estimated 395 cubic yards of debris were removed from the excavations.

PCS from the Lukanin Bay PCS Area was transported to the lined stockpile located at Tract 42 (Figure 1). Initially, PCS removed from the vicinity of former sampling location SP12-SB32 was placed on a separate liner because of concerns regarding elevated concentrations of PAHs. This material was subsequently incorporated into the existing PCS stockpile based on fixed laboratory analytical data, which indicated that concentrations of PAHs were consistent with existing material in the PCS stockpile (Table 2).

Wood and metal debris removed from the excavations were disposed on Tract 42, where two holes were excavated within the 50-foot setback area. Debris was placed in the holes and covered with fill material, thereby incorporating the debris with existing municipal solid waste during closure activities conducted at Tract 42 later in the 2004 field season.

Clean fill material for excavations at the Lukanin Bay PCS Area consisted of sand and pieces of concrete. The approximately 1,210 cubic yards of sand backfill originated from the Salt Lagoon Channel. Kelly Ryan, Inc., under contract to the U.S. Army Corps of Engineers, removed the sand during a harbor-dredging project (Kelly Ryan, Inc. 2004). The concrete originated from the foundation of a former drum pad on Tract 50 (Non-TPA Site 58) demolished by NOAA in 2004. The areas of excavation were restored to original grade. Site restoration activities included the placement of a native seed mixture and fertilizer and the installation of erosion control matting. Large rocks were also placed along the eastern boundary of the site to restrict vehicle access. Backfill and site restoration activities were completed on September 29, 2004.

Recommended Action:

In accordance with paragraph 59 of the Two Party Agreement (NOAA 1996), NOAA requests written confirmation that NOAA completed all appropriate corrective action, to the maximum extent practicable, at the Lukanin Bay Site (TPA Sites 12a, 12b, and 12c/NOAA Sites 31, 32, and 33) in accordance with the Agreement and that ADEC grant a conditional closure not requiring further remedial action from NOAA. NOAA understands ADEC will/may require additional containment, investigation, or cleanup if subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment.

References:

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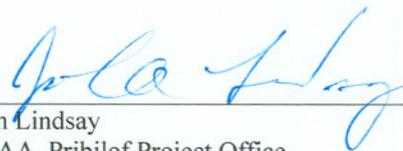
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Request for Conditional Closure
Lukanin Bay Site
TPA Sites 12a, 12b, 12c/NOAA Sites 31, 32, 33
St. Paul Island, Alaska

For the National Oceanic and Atmospheric Administration



John Lindsay
NOAA, Pribilof Project Office

5/2/05
Date

Approvals: In accordance with Paragraph 59 of the Two Party Agreement, this is to confirm that all corrective action has been completed to the maximum extent practicable at the Lukanin Bay Site (TPA Sites 12a, 12b, and 12c/NOAA Sites 31, 32, and 33) in accordance with the Agreement and that no further remedial action is required as a part of this conditional closure granted by ADEC.

For the Alaska Department of Environmental Conservation



Louis Howard
Alaska Department of Environmental Conservation
Remedial Project Manager

5/5/05
Date

Tables and Figures

TABLE 1

**ANALYTICAL DATA SUMMARY - BTEX, GRO, DRO, RRO, AND LEAD
SITE 33/TPA SITE 12c - LUKANIN BAY PCS
ST. PAUL ISLAND, ALASKA**

(Page 1 of 4)

Sample Number	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	RRO (mg/kg)	Lead (mg/kg)
Site 33/TPA Site 12c Confirmation Samples									
SP33-CS-001-040	4	0.02 U	0.02 U	0.02 U	0.06 U	--	10 U	50 U	--
SP33-CS-001-300 ^a	4	0.03 U	0.03 U	0.03 U	0.09 U	--	--	--	--
SP33-CS-002-040	4	0.02 U	0.02 U	0.02 U	0.06 U	--	84	50 U	--
SP33-CS-003-060	6	0.02 U	0.02 U	0.02 U	0.06 U	--	10 U	50 U	--
SP33-CS-007-150	15	0.02 U	0.02 U	0.02 U	0.06 U	--	10 U	50 U	--
SP33-CS-008-150	15	0.03 U	0.03 U	0.03 U	0.09 U	--	10 U	50 U	--
SP33-CS-009-080	8	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-010-080	8	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-017-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-021-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-023-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-024-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-028-120	12	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-029-120	12	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-033-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-034-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-034-315 ^b	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-035-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-035-320 ^c	15	--	--	--	--	--	10 U	50 U	--
SP33-CS-036-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-037-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-038-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-CS-039-150	15	0.05 U	0.05 U	0.05 U	0.15 U	--	12	50 U	--

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Site 33/TPA Site 12c Stockpile Samples									
SP33-SS-001-000	0	0.02 U	0.02 U	0.02 U	0.06 U	--	150	340	--
SP33-SS-002-000	0	0.02 U	0.02 U	0.02 U	0.06 U	--	280	680	--
SP33-SS-003-000	0	0.02 U	0.02 U	0.02 U	0.06 U	--	310	2,300	--
SP33-SS-004-000	0	0.02 U	0.02 U	0.02 U	0.06 U	--	6,900	3,200 J	--
SP33-SS-005-000	0	0.02 U	0.02 U	0.02 U	0.06 U	--	170	630	--
SP33-SS-006-000	0	0.02 U	0.02 U	0.02 U	0.06 U	--	23	120	--
SP33-SS-007-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	380	1,700	--
SP33-SS-008-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	110	640	--
SP33-SS-009-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	2,600	9,100 J	--
SP33-SS-010-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	300	99	--
SP33-SS-010-305 ^d	0	0.05 U	0.05 U	0.05 U	0.15 U	--	250	130	--
SP33-SS-011-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	10 U	50 U	--
SP33-SS-012-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	52	340	--
SP33-SS-013-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	25	50 U	--
SP33-SS-014-000	0	0.05 U	0.05 U	0.05 U	0.15 U	--	120	530	--
SP33-SS-015-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	300	1,500	--
SP33-SS-016-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	2,100	4,600	--
SP33-SS-017-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	100	370	--
SP33-SS-018-000	0	0.02	0.08	0.03	0.11	1 U	94	110	--
SP33-SS-019-000	0	0.1 U	0.2	0.1 U	0.4	5 U	310	1,300	--
SP33-SS-020-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	22	78	--
SP33-SS-021-000	0	0.02 U	0.07	0.02 U	0.06 U	1 U	380	980	--
SP33-SS-022-000	0	0.02 U	0.38	0.05	0.27	2	120	570	--
SP33-SS-023-000	0	0.02 U	0.06	0.02 U	0.06 U	1 U	10 U	50 U	--
SP33-SS-024-000	0	0.02 U	0.06 U	0.02 U	0.06 U	2 U	110	410	--
SP33-SS-024-305 ^e	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	130	570	--
SP33-SS-025-000	0	0.02 U	0.02	0.02 U	0.06 U	1 U	10 U	50 U	--
SP33-SS-026-000	0	0.02 U	0.17	0.04	0.17	1	39	150	--
SP33-SS-027-000	0	0.02	0.05	0.03	0.08	1 U	39	130	--
SP33-SS-028-000	0	0.02 U	0.21	0.03	0.15	1 U	22	66	--
SP33-SS-029-000	0	0.02 U	0.02	0.02 U	0.06 U	1 U	10 U	50 U	--

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SP33-SS-030-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	10 U	50 U	--
SP33-SS-031-000	0	0.02 U	0.46	0.06	0.33	2	13	65	--
SP33-SS-032-305 ^f	0	0.02 U	0.06	0.02 U	0.06 U	1 U	17	74	--
SP33-SS-033-000	0	0.1 U	0.4	0.1	0.4	5 U	31	67	--
SP33-SS-034-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	13	50 U	--
SP33-SS-034-305 ^g	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	10 U	50 U	--
SP33-SS-035-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	10 U	50 U	--
SP33-SS-036-000	0	0.02 U	0.02	0.02 U	0.06 U	1 U	28	50 U	--
SP33-SS-037-000	0	0.02 U	0.02 U	0.02 U	0.06 U	1 U	10 U	50 U	--
Site 33/TPA Site 12c Backfill Characterization Samples									
SPSL-CH-001-015	1.5	--	--	--	--	--	--	--	2.93 ^h
SPSL-CH-002-015	1.5	--	--	--	--	--	--	--	3.49 ^h
SPSL-CH-003-015	1.5	--	--	--	--	--	--	--	3.38 ^h
Trip Blank Samples									
SP33-TB-001-000	0	0.02 U	0.02 U	0.02 U	0.06 U	--	--	--	--
SP33-TB-002-000	0	0.06 U	0.06 U	0.06 U	0.18 U	--	--	--	--
SP33-TB-001-000	0	0.02 U	0.04 U	0.04 U	0.12 U	2 U	--	--	--
<i>ADEC Method Two Cleanup Levelⁱ</i>									
		0.5 ^j	5.4	5.5	78	300	250	10,000	400 ^k

TABLE 1

ANALYTICAL DATA SUMMARY - BTEX, GRO, DRO, RRO, AND LEAD SITE 33/TPA SITE 12c - LUKANIN BAY PCS SITE ST. PAUL ISLAND, ALASKA (4 of 4)

Notes

bold	Indicates concentration above one or both cleanup levels. Although reporting limits for benzene sometimes exceeded the ADEC Method Two cleanup level of 0.02 mg/kg, all reporting limits were equal to or below the soil cleanup level of 0.5 mg/kg established under the TPA.
ADEC	Alaska Department of Environmental Conservation
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
DRO	Diesel-range organic compounds
GRO	Gasoline-range organic compounds
mg/kg	Milligram per kilogram
--	Not analyzed
PAH	Polynuclear aromatic hydrocarbon
RRO	Residual-range organic compounds
TPA	Two-Party Agreement
U	Analyte was analyzed for, but not detected above the sample reporting limit
J	Analyte was positively identified, but the numerical value is an estimated concentration; result is considered qualitatively acceptable, but quantitatively unreliable
a	Duplicate of sample number SP33-CS-001-040
b	Duplicate of sample number SP33-CS-034-150
c	Duplicate of sample number SP33-CS-035-150
d	Duplicate of sample number SP33-SS-010-000
e	Duplicate of sample number SP33-SS-024-000
f	Duplicate of sample number SP33-SS-031-000
g	Duplicate of sample number SP33-SS-034-000
h	Lead concentration is consistent with island background levels (Tetra Tech EM Inc. 2000. <i>Soil Background Study, Pribilof Islands Site Restoration, St. Paul Island, Alaska</i>).
i	Unless otherwise noted, cleanup level is from Title 18 of the <i>Alaska Administrative Code</i> 75 "Oil and Hazardous Substances Pollution Control Regulations," published by the State of Alaska and effective January 30, 2003. Contaminants of concern for this site are limited to BTEX, DRO, RRO, and select PAHs; although not identified as contaminants of concern in the corrective action plan, GRO and lead are included in this table because these analyses were conducted on some samples.
j	Under the TPA, NOAA is required to comply with the 1991 ADEC cleanup level for benzene (0.5 mg/kg). However, NOAA has attempted to remove benzene to within the current ADEC Method Two cleanup level (0.02 mg/kg) to the maximum extent practicable.
k	Although this site is located within an industrial area, NOAA is using the residential cleanup level.

TABLE 2

**ANALYTICAL DATA SUMMARY - POLYNUCLEAR AROMATIC HYDROCARBONS
SITE 33/TPA SITE 12c - LUKANIN BAY PCS SITE
ST. PAUL ISLAND, ALASKA**

(Page 2 of 3)

Sample Number	Sample Depth (feet bgs)	Naphthalene (mg/kg)	Acenaphthylene (mg/kg)	Acenaphthene (mg/kg)	Fluorene (mg/kg)	Phenanthrene (mg/kg)	Anthracene (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	Benz(a) anthracene (mg/kg)	Chrysene (mg/kg)	Benzo(b) fluoranthene (mg/kg)	Benzo(k) fluoranthene (mg/kg)	Benzo(a) pyrene (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Dibenzo(a,h) anthracene (mg/kg)	Benzo(g,h,i) perylene (mg/kg)
Site 33/TPA Site 12c Stockpile Samples																	
SP33-SS-001-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.036	0.067	0.043	0.1	0.056	0.008	0.069	0.023	0.079	0.019	0.007	0.019
SP33-SS-002-000	0	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
SP33-SS-003-000	0	0.05 U	0.05 U	0.05 U	0.05 U	0.16	0.18 U	0.15	0.37	0.16	0.05 U	0.22	0.089	0.24	0.071	0.05 U	0.084
SP33-SS-004-000	0	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
SP33-SS-005-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.081	0.17	0.084	0.21	0.13	0.023	0.24	0.067	0.3	0.09	0.054	0.12
SP33-SS-006-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.006	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-007-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.011	0.005 U	0.011	0.056	0.019	0.019	0.020	0.005 U	0.023	0.008	0.005 U	0.022
SP33-SS-008-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.033	0.008	0.041	0.11	0.039	0.048	0.055	0.016	0.055	0.025	0.013	0.037
SP33-SS-009-000	0	0.25 U	0.5	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.32	0.25 U	0.25 U	1.1	0.34	0.25 U	0.38
SP33-SS-010-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-010-305 ^c	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-011-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-012-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.018	0.005 U	0.011	0.023	0.008	0.009	0.008	0.005 U	0.007	0.005 U	0.005 U	0.005 U
SP33-SS-013-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-014-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.013	0.005 U	0.011	0.029	0.01	0.013	0.015	0.005 U	0.015	0.007	0.005 U	0.008
SP33-SS-015-000	0	0.05 U	0.05 U	0.05 U	0.05 U	0.22	0.05 U	0.16	0.34	0.12	0.15	0.17	0.072	0.25	0.074	0.05 U	0.1
SP33-SS-016-000	0	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
SP33-SS-017-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.015	0.005 U	0.015	0.03	0.015	0.018	0.031	0.005 U	0.021	0.006	0.005 U	0.006
SP33-SS-018-000	0	0.005	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-019-000	0	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
SP33-SS-020-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-021-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.011	0.013	0.005	0.009	0.011	0.01	0.006	0.005 U	0.005 U	0.005 U
SP33-SS-022-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.01	0.024	0.01	0.012	0.018	0.005 U	0.014	0.005	0.005 U	0.007
SP33-SS-023-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-024-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-024-305 ^d	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-025-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.006	0.005 U	0.005 U	0.008	0.005 U	0.007	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-026-000	0	0.014	0.005 U	0.005 U	0.005 U	0.025	0.006	0.023	0.025	0.013	0.018	0.018	0.005 U	0.005 U	0.006	0.005 U	0.005 U
SP33-SS-027-000	0	0.009	0.005 U	0.006	0.008	0.082	0.022	0.056	0.091	0.053	0.079	0.085	0.01	0.013	0.014	0.006	0.005 U
SP33-SS-028-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.014	0.005 U	0.015	0.023	0.015	0.021	0.023	0.008	0.02	0.011	0.006	0.013
SP33-SS-029-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-030-000	0	0.007	0.005 U	0.005 U	0.005 U	0.016	0.005 U	0.015	0.018	0.01	0.013	0.012	0.005 U	0.01	0.005 U	0.005 U	0.005 U
SP33-SS-031-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-032-305 ^e	0	0.005 U	0.005 U	0.005 U	0.005 U	0.039	0.007	0.054	0.072	0.061	0.086	0.093	0.024	0.074	0.032	0.018	0.029
SP33-SS-033-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.007	0.012	0.007	0.01	0.008	0.005 U	0.005 U	0.005 U	0.005 U	0.006
SP33-SS-034-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-034-305 ^f	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-035-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-036-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.015	0.005 U	0.012	0.019	0.009	0.014	0.008	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SP33-SS-037-000	0	0.005 U	0.005 U	0.005 U	0.005 U	0.013	0.005 U	0.018	0.019	0.011	0.011	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Site 33/TPA Site 12c Backfill Characterization Samples																	
SPSL-CH-001-015	1.5	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SPSL-CH-002-015	1.5	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SPSL-CH-003-015	1.5	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
<i>Method Two Cleanup Level^g</i>		43	NA	210	270	NA	4,300	NA	1,500	6	620	11	110	1	11	1	NA

TABLE 2

ANALYTICAL DATA SUMMARY - POLYNUCLEAR AROMATIC HYDROCARBONS SITE 33/TPA SITE 12c - LUKANIN BAY PCS SITE ST. PAUL ISLAND, ALASKA (3 of 3)

Notes

bold	Indicates concentration exceeding ADEC Method Two cleanup level
bgs	Below ground surface
mg/kg	Milligram per kilogram
NA	Not available
PCS	Petroleum-contaminated soil
TPA	Two Party Agreement
U	The analyte was analyzed for but not detected above the sample reporting limit.
a	Duplicate of sample number SP33-CS-034-150
b	Duplicate of sample number SP33-CS-035-150
c	Duplicate of sample number SP33-SS-010-000
d	Duplicate of sample number SP33-SS-024-000
e	Duplicate of sample number SP33-SS-031-000
f	Duplicate of sample number SP33-SS-034-000
g	Cleanup level is from Title 18 of the <i>Alaska Administrative Code</i> 75, "Oil and Hazardous Substances Pollution Control Regulations," published by the State of Alaska and effective January 30, 2003.

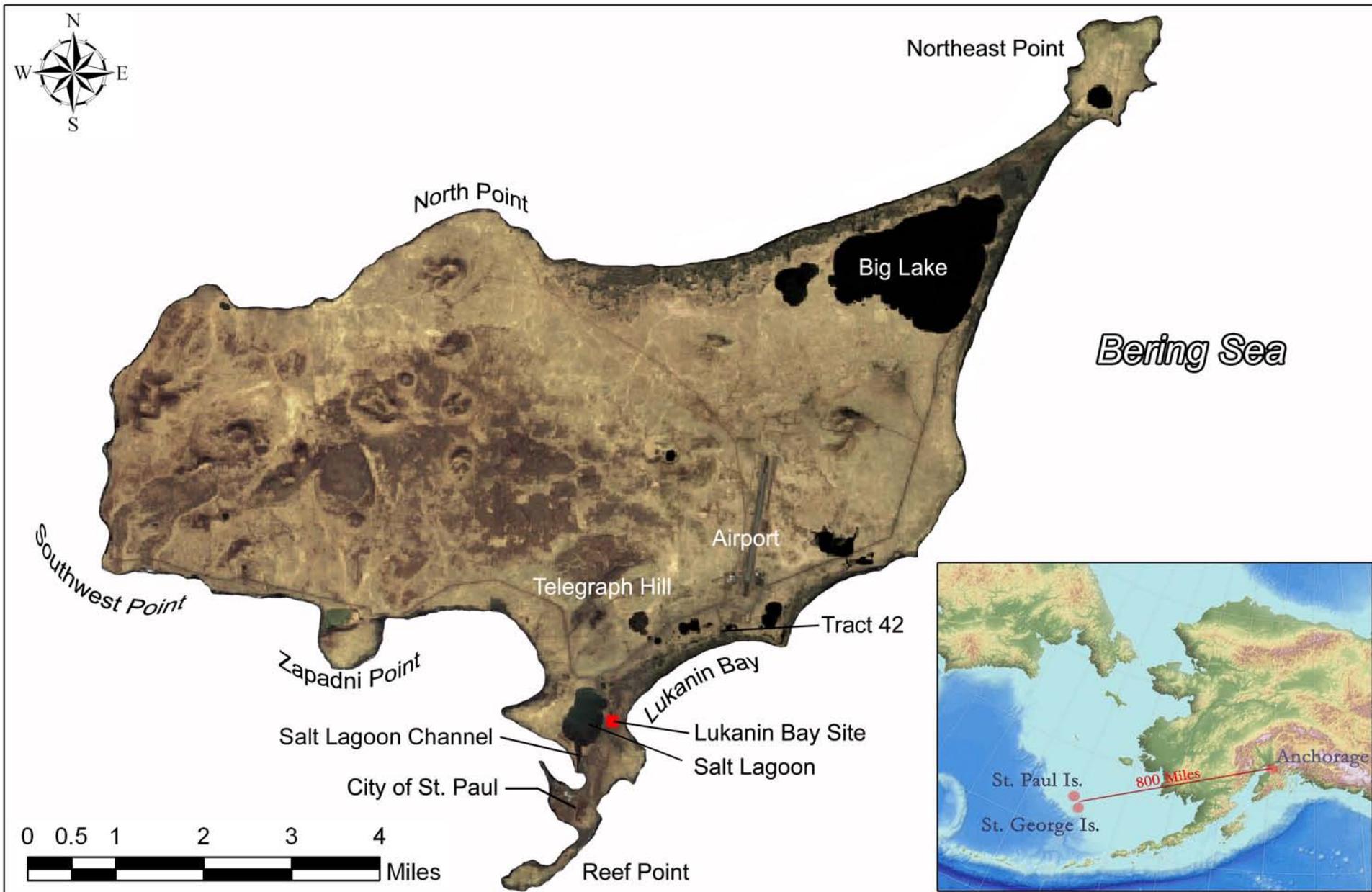


Figure
1

St. Paul Island Vicinity Map
Lukanin Bay Site
Sites 31, 32, 33/TPA Sites 12a, b, and c
St. Paul Island, Alaska

Source: Ikonos Satellite
Imagery, 2001



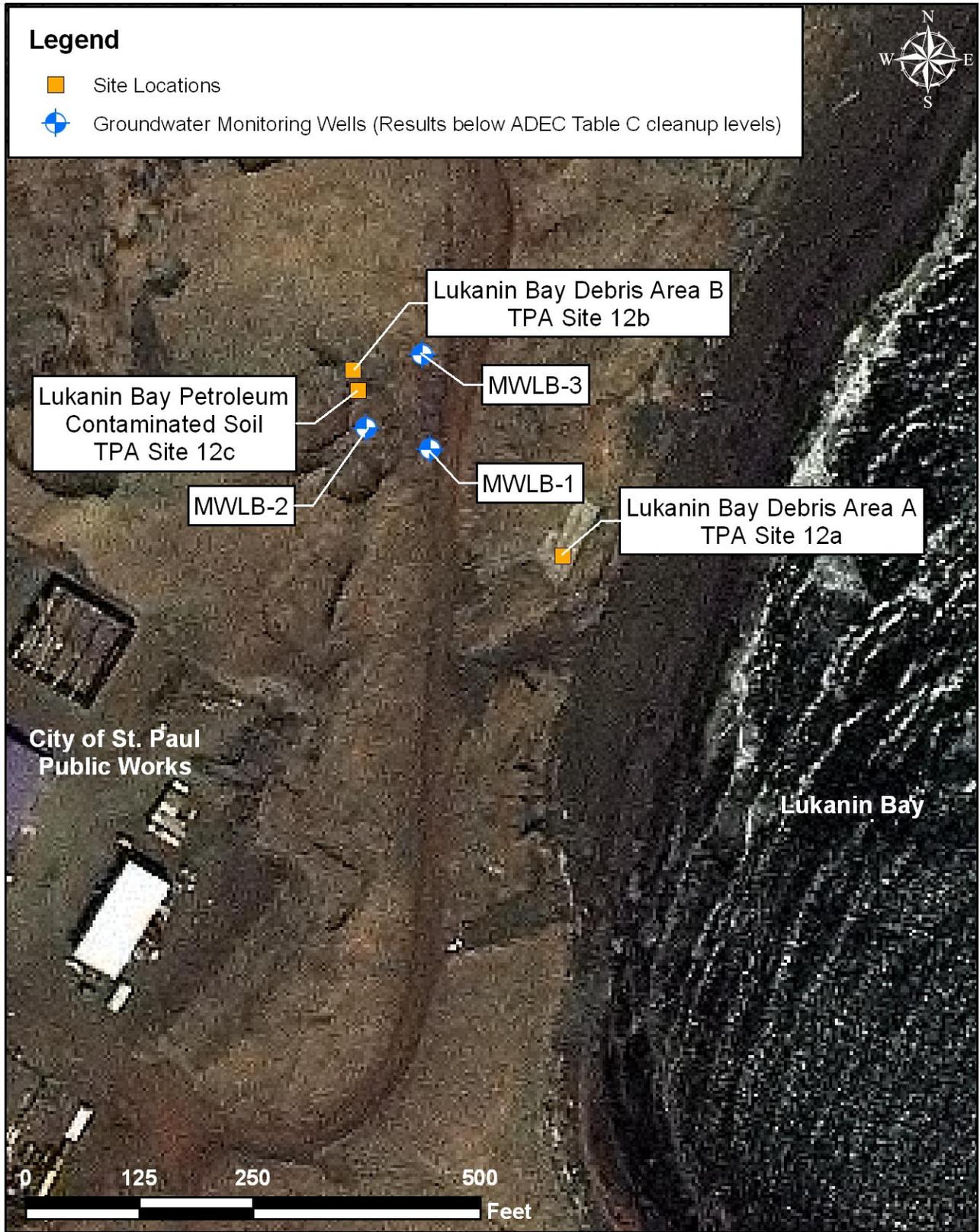


Figure 2
Lukanin Bay Site Vicinity
Sites 31, 32, 33/TPA Sites 12a, b, and c
St. Paul Island, Alaska

Sources: Site Locations (NOAA Pribilof Project GIS), Satellite Imagery (Ikonos 2001).



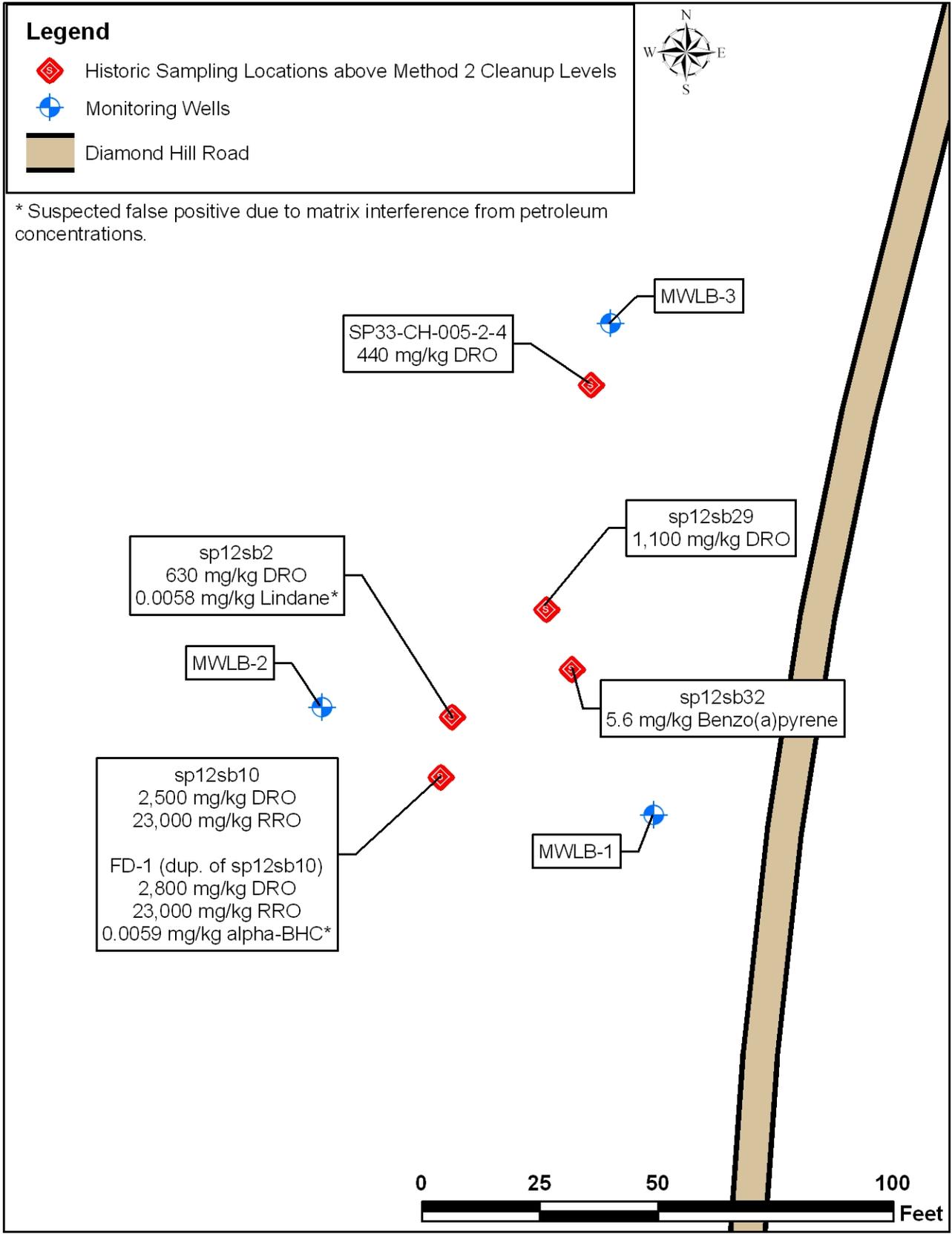


Figure 3 Historical Sampling Locations Above Method 2 Lukanin Bay Petroleum Contaminated Soil Area Site 33/TPA Site 12c St. Paul Island, Alaska

Source: NOAA Pribilof Project GIS, 2005.

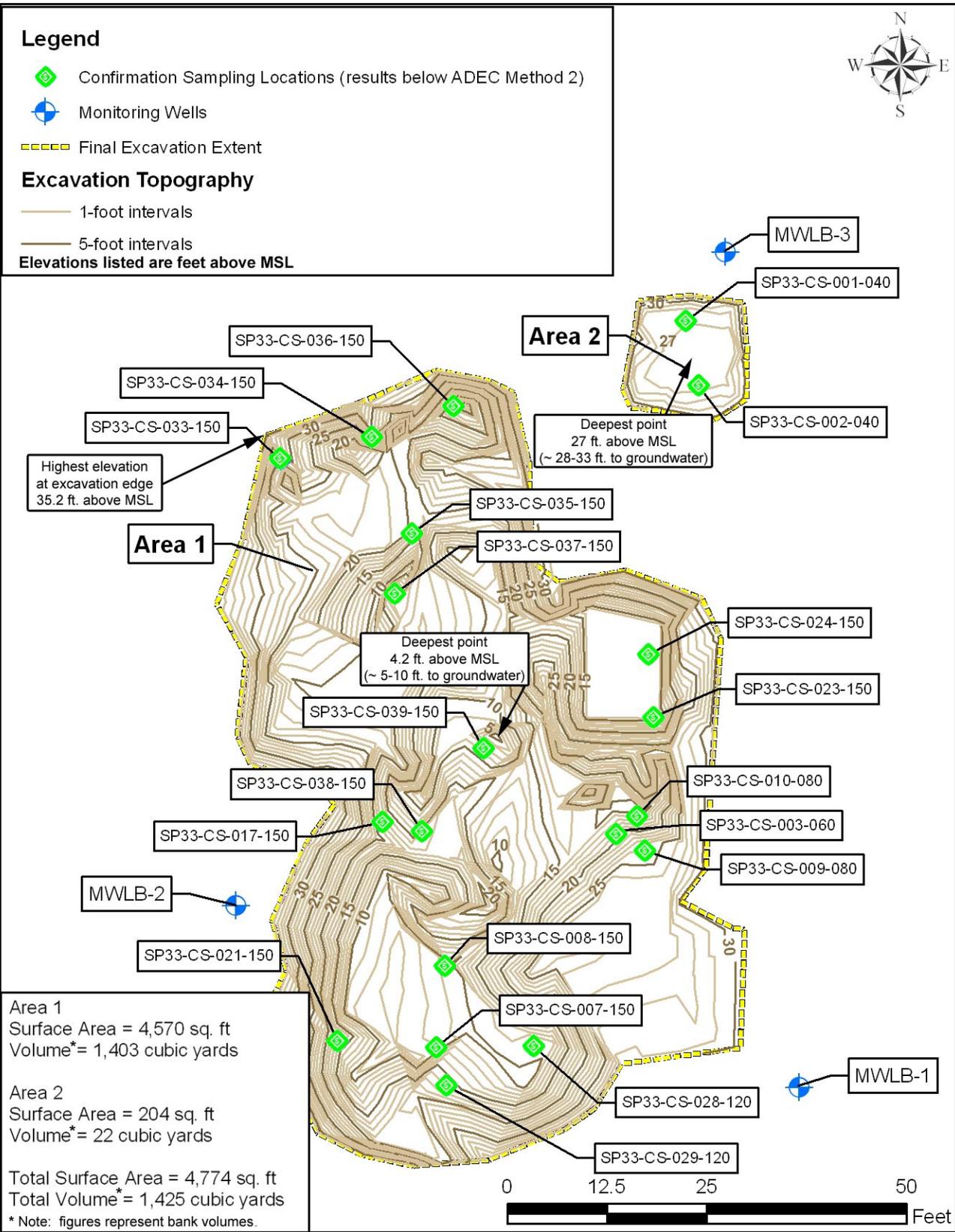


Figure
4

Confirmation Sampling Location Map
 Lukanin Bay Petroleum Contaminated Soil Area
 Site 33/TPA Site 12c
 St. Paul Island, Alaska

Sources: NOAA Pribilof Project GIS (2004), Ikonos Satellite Imagery (2001).

